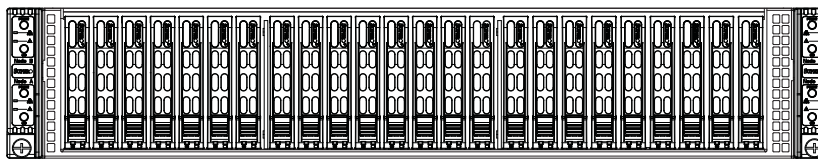
SUPERMICRO®

SuperServer 2026TT-HTRF
SuperServer 2026TT-HIBXRF
SuperServer 2026TT-HIBQRF
SuperServer 2026TT-H6RF
SuperServer 2026TT-H6IBXRF
SuperServer 2026TT-H6IBQRF



USER'S MANUAL

Revision 1.0a

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 2026TT-HTRF/HDIBXRF/HDIBQRF. Installation and maintenance should be performed by experienced technicians only.

The SuperServer SuperServer 2026TT-HTRF/HDIBXRF/HDIBQRF is a 2U Twin^2 (four serverboards/nodes in a 2U chassis) rackmount server based on the SC217HQ-R1400BP server chassis and four Super X8DTT-HF+/X8DTT-HIBXF+/X8DTT-HIBQF+ serverboards. The "(H)" in the product name indicates that the system is cableless.

The main differences between the various serverboards and the servers they are in is shown in the table below:

Model Variations (Differences between X8DTT-x Models)			
	X8DTT-HF+	**X8DTT-HIBXF+**	**X8DTT-HIBQF+**
IPMI 2.0 w/ KVM Over LAN	Yes	Yes	Yes
InfiniBand Connection	No	Yes	Yes
DDR IB	No	Yes	No
QDR IB	No	No	Yes

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super X8DTT-HF+/X8DTT-HIBXF+/X8DTT-HIBQF+ serverboard and the SC217HQ-R1400BP chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 2026TT-HTRF/HDIBXRF/HDIBQRF into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 2026TT-HTRF/HDIBXRF/HDIBQRF.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X8DTT-HF+/X8DTT-HIBXF+/X8DTT-HIBQF+ serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC217HQ-R1400BP 2U rack-mount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: Installing Windows

Appendix C: System Specifications

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Appendix A BIOS Error Beep Codes

Appendix B Installing Windows

Appendix C System Specifications

Chapter 1

Introduction

1-1 Overview

The SuperServer 2026TT-HTRF/HIBXRF/HIBQRF/H6RF/H6IBXRF/H6IBQRF is a "2U Twin²" server comprised of the SC217HQ-R1400BP 2U chassis and four X8DTT-H(E)F+/X8DTT-HIBXF+/X8DTT-HIBQF+ serverboards. See the list below for the serverboard included in each server model.

In addition to the serverboard and chassis, various hardware components may have been included with the system, as listed below.

- Eight passive CPU heatsinks (SNK-P0037P)
- Four 8-cm cooling fans (FAN-0111L4)
- Four air shrouds (MCP-310-82710-0B)
- SAS/SATA Accessories:
  Twelve hard drive carriers (six per node) (MCP-220-00075-0B)
  One internal HDD backplane (BPN-SAS-217HQ)
  Four SAS daughter cards (2026TT-H6 models only, BPN-ADP-SAS2-H8iR)
  Four SATA daughter cards (non-H6 models only, BPN-827ADP-X8-H+)
- Four PCI Express riser cards (RSC-R1U-E16R)
- Rackmount rails kit (MCP-290-00053-0N)
- One CD containing drivers and utilities
- SuperServer 2026TT-HxRF User's Manual

Note: These servers do not require the use of SATA cables.

2026TT-HTRF: X8DTT-HF+ serverboard

2026TT-HIBXRF: X8DTT-HIBXF+ serverboard

2026TT-HIBQRF: X8DTT-HIBQF+ serverboard

2026TT-H6RF: X8DTT-HE+ serverboard

2026TT-H6IBXRF: X8DTT-HIBXF+ serverboard

2026TT-H6IBQRF: X8DTT-HIBQF+ serverboard

1-2 Serverboard Features

At the heart of the SuperServer 2026TT are two X8DTT series dual processor serverboards (see list on previous page), which are based on Intel's 5520 + ICH10R chipset. Below are the main features of the serverboards. Note that the features on each board are quadrupled for the server, which includes four nodes.

Processors

Each X8DTT series serverboard supports two Intel® 5600/5500 series processors in LGA1366 sockets. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

Each X8DTT has twelve DIMM sockets that can support up to 192 GB of registered ECC DDR3-1333/1066/800 SDRAM or 48 GB of unbuffered ECC/Non-ECC 1333/1066/800 MHz memory for a maximum of 768 GB for the system. See Chapter 5 Section 6 for more details on installing memory into the system.

Onboard SAS (2026TT-H6 models only)

An LSI 2108 SAS controller is integrated into a daughter card to provide six SAS ports per node. The hot-swap SAS drives are connected to a backplane that provides power, bus termination and configuration settings.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SAS drives. RAID 0, 1, 5 and 10 and 6 are supported. Refer to the following ftp site for setup guidelines <ftp://ftp.supermicro.com/driver/SAS/LSI/LSI_SAS_EmbMRAID_SWUG.pdf>.

Serial ATA

The South Bridge (ICH10R) of the chipset includes a Serial ATA controller for six Gb/s SATA drives. The hot-swappable SATA drives are connected to a backplane that provides power, bus termination and configuration settings. RAID 0, 1, 10 and 5 are supported. Refer to the support area of our web site for procedures on setting up RAID on your system.

PCI Expansion Slots

Each X8DTT-HF+/X8DTT-HIBXF+/X8DTT-HIBQF+ has included riser cards that allow it to support two full-sized PCI Express 2.0 x8 expansion cards (in x16 slots), or four total for the server.

Ethernet Ports

An Intel® network controller is integrated into each of the serverboards to support two Gigabit LAN ports (100/1000Base-T/1000BaseTX, RJ45 output).

Onboard Controllers/Ports

Onboard I/O backpanel ports on each serverboard include one COM port, a VGA port, two USB ports, a dedicated IPMI LAN port and two Gigabit LAN (NIC) ports. An InfiniBand port is also included on the X8DTT-HIBXF+/HIBQF+ serverboards (the 2026TT-HIBXRF, 2026TT-HIBQRF, 2026TT-H6IBXRF and 2026TT-H6IBQRF only). Up to four USB 2.0 (Universal Serial Bus) connections (2 Rear USB Ports and 1 Type A Header w/2 USB connections supported) are on each of the servers. There are two sets of I/O ports included in the server (one set for each serverboard).

Graphics Controller

The X8DTT-HF+/X8DTT-HIBXF+/X8DTT-HIBQF+ features an integrated Matrox G200eW graphics chip, which includes 16 MB of DDR2 memory.

Other Features

Other onboard features that promote system health include voltage monitors, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

InfiniBand

The 2026TT-HIBXRF, 2026TT-HIBQRF, 2026TT-H6IBXRF and 2026TT-H6IBQRF include an InfiniBand port at DDR (dual data rate) and QDR (quad data rate) speeds, respectively. InfiniBand is a scalable serial communications link intended for connecting processors with high-speed peripherals. (InfiniBand requires a QSFP connector.)

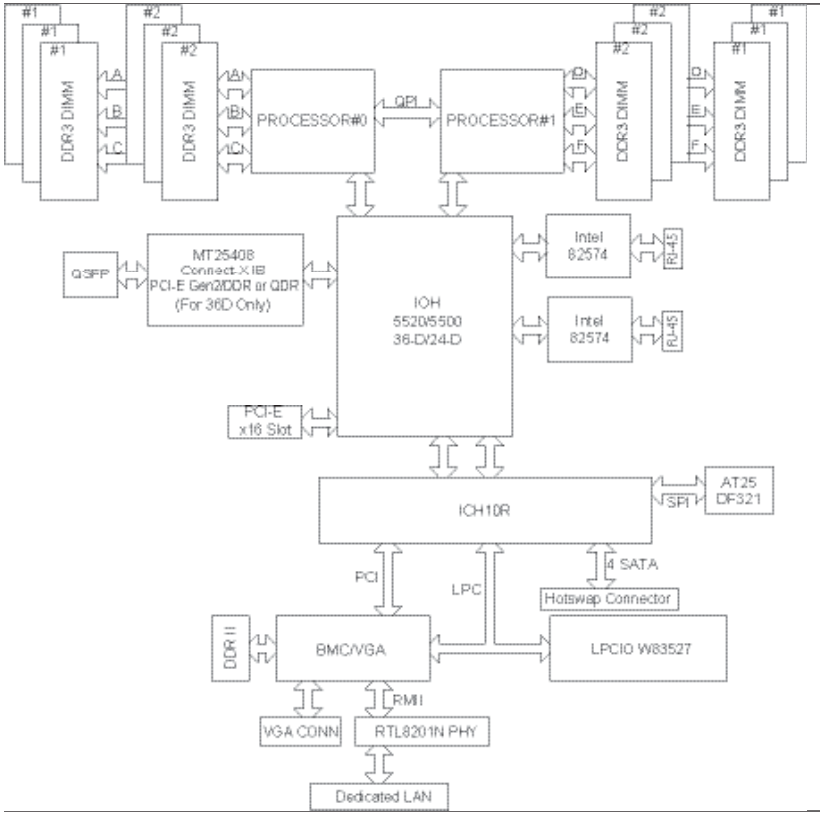

Figure 1-1. Intel 5520 Chipset:
System Block Diagram

Note1: This is a general block diagram. Please see Chapter 5 for details.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC217HQ-R1400BP 2U chassis. Details on the chassis can be found in Chapter 6.

System Power

The SC217HQ-R1400BP includes a redundant (dual) 1400W power supply, which provides power to both serverboards (nodes). If either power supply failes, the other will allow the system to continue to run.

SATA Subsystem

The SC217HQ-R1400BP chassis was designed to support 24 SAS/SATA hard drives, which are hot-swappable units. There are six hard drives per node in the system.

Control Panel

The SC217HQ-R1400BP features four independant control panels. Each control panel has LEDs to indicate power on, network activity, power fail, fan fail, system overheat conditions and the UID LED for it's own specific node. Each control panel also includes a main power button and a UID button.

Rear I/O Panel

The SC217HQ-R1400BP is a 2U rackmount chassis. Its I/O panel provides slots for four low-profile PCI Express x16 expansion cards, four COM ports, eight USB ports, four VGA ports and eight Gb Ethernet ports. See Chapter 6 for details.

Cooling System

The SC217HQ-R1400BP chassis has an innovative cooling design that features four 8-cm high-performance fans. A fan speed control setting in BIOS allows fan speed to be determined by system temperature. See Chapter 6 for details.

1-4 2U Twin: System Notes

As a 2U Twin configuration, the 2026TT-HxRF is a unique server system. With four system boards incorporated into a single chassis acting as four separate nodes, there are several points you should keep in mind.

Nodes

Each of the four serverboards act as a separate node in the system. As independant nodes, each may be powered off and on without affecting the others. In addition, each node is a hot-swappable unit that may be removed from the rear of the chassis. The nodes are connected to the server backplane by means of an adapter card.

System Power

The server has an additional 1400W power supply module (two total) for power redundancy. If a power supply module fails the other backup module will keep the system running until it can be replaced.

SAS/SATA Backplane/Drives

As a system, the 2026TT-HxRF supports the use of 24 SAS or SATA drives. A single backplane works to apply system-based control for power and fan speed functions, yet at the same time logically connects a set of six drives to each serverboard. Consequently, RAID setup is limited to a six-drive scheme (RAID cannot be spread across all 24 drives). See the *Drive Bay Installation/Removal* section in Chapter 6 for the logical hard drive and node configuration.

1-5 Contacting Supermicro

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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
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Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get the 2026TT-HxRF up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the system was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the server was shipped in should include the rackmount hardware needed to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from it.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.
- Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

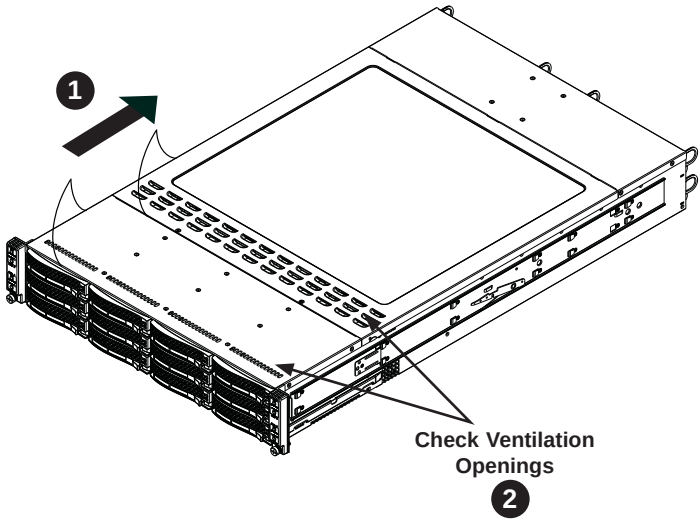
Removing the Protective Film

Before operating the server for the first time, it is important to remove the protective film covering the top of the chassis, in order to allow for proper ventilation and cooling.

Removing the Protective Film

1. Peel off the protective film covering the top cover and the top of the chassis
2. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

Figure 2-1: Removing the Protective Film



Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

2-4 Rack Mounting Instructions

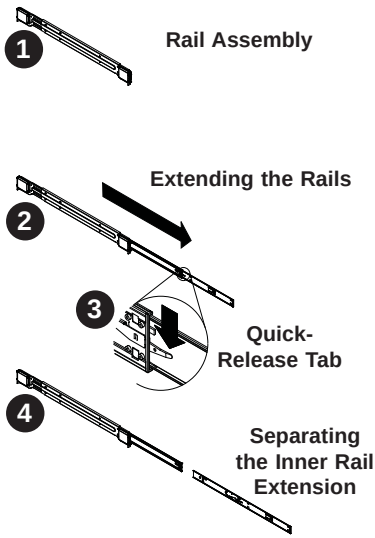
This section provides information on installing the SC217 chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Note: This rail will fit a rack between 26" and 33.5" deep.

Separating the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Figure 2-2. Separating the Rack Rails



Separating the Inner and Outer Rails

1. Locate the rail assembly in the chassis packaging.
2. Extend the rail assembly by pulling it outward.
3. Press the quick-release tab.
4. Separate the inner rail extension from the outer rail assembly.

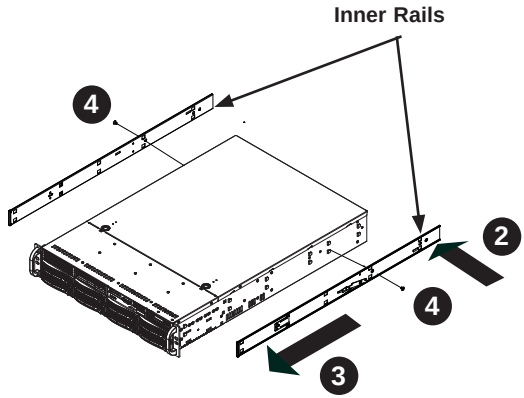


Figure 6-3: Installing the Inner Rails

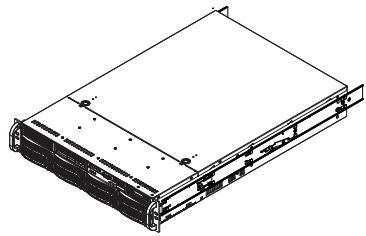


Figure 2-3: Installing the Inner Rails

Installing The Inner Rails on the Chassis

Installing the Inner Rails

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.
4. Secure the inner rail to the chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.

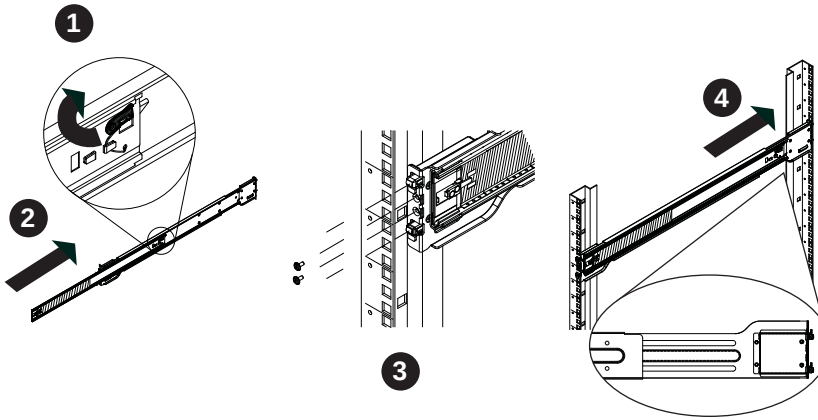


Figure 6-5: Extending and Releasing the Outer Rails

Installing the Outer Rails on the Rack

Installing the Outer Rails

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.

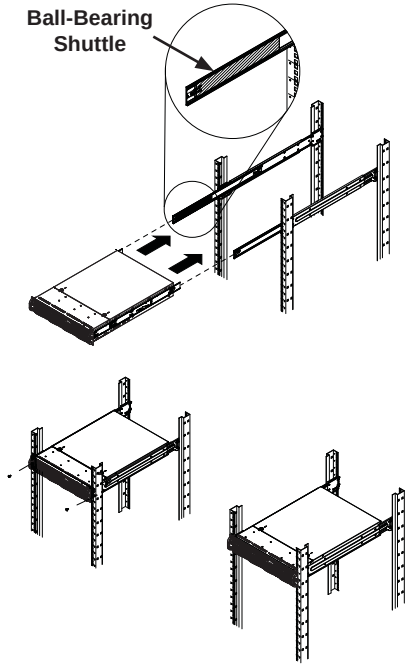


Figure 6-6: Installing into a Rack

Standard Chassis Installation

Installing the Chassis into a Rack

1. Confirm that the inner rails are properly installed on the chassis.

2. Confirm that the outer rails are correctly installed on the rack.

3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.

4. Align the chassis inner rails with the front of the middle rails.

5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.

6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.

7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

2-5 Checking the Serverboard Setup

After you install the system in the rack, you will need to access the inside of the nodes to make sure the serverboard is properly installed.

Accessing the Inside of a Node (Figure 2-6)

1. Make sure the protective film on the cover has been removed as described in the previous section.

2. Before removing a node, unplug all the cables that connect to that node.

3. To remove a node, first push the two latches (located near the handles) inward.

4. Grasp the handles and pull the node out from the rear of the chassis.

5. To remove the system from the rack completely, depress the locking tabs in the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

Checking the Components and Setup

1. You may have one or two processors already installed in each of the four serverboards. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

2. Your server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

3. You can install four add-on cards to the system (one for each node). See Chapter 5 for details on installing PCI add-on cards.

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

2-6 Preparing to Power On

Next, you should check to make sure the hard drives and the backplane have been properly installed and all connections have been made.

Checking the Hard Drives

1. The hard disk drives are accessable from the front of the server and can be installed and removed from the front of the chassis without removing the top chassis cover.

2. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by four 8-cm PWM fans and (for each serverboard) one air shroud. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.

2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

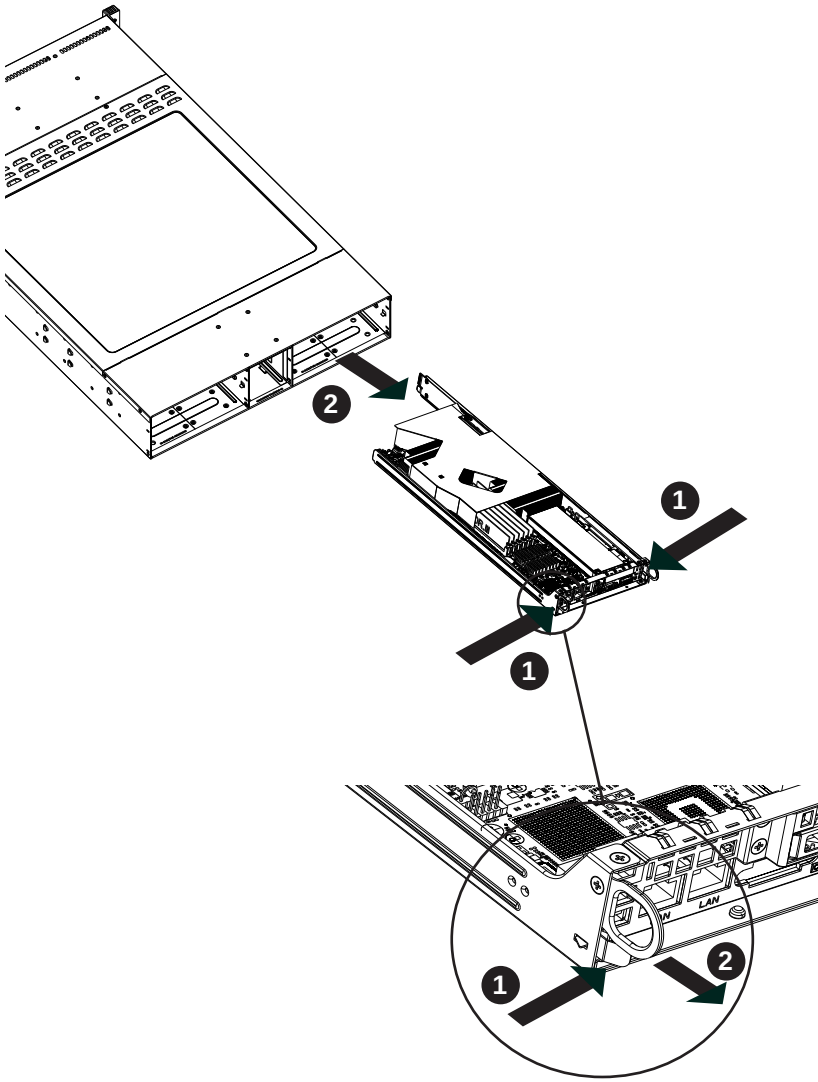
Providing Power

1. Plug the power cords from the power supplies unit into a high-quality power strip that offers protection from electrical noise and power surges.

2. It is recommended that you use an uninterruptible power supply (UPS).

3. Finally, depress the power on button on the front of the chassis.

Figure 2-6. Removing a Node from the System



Notes

Chapter 3

System Interface

3-1 Overview

There are LEDs on the control panels and on the hard drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on each control panel. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take. Note that the server has four control panels, one for each serverboard (node) installed in the system. This allows each node to be controlled independently of the other.

3-2 Control Panel Buttons

There are two push-buttons located on each control panel: a power on/off button and a UID button.

Power

This is the main power button, which is used to apply or turn off the main system power only to the node it is connected to. Depressing this button removes the main power but keeps standby power supplied to the serverboard. Therefore, you must unplug the AC power cord from any external power source before servicing. This button has an LED built into it, which will illuminate when its node is powered on.

UID

Depressing the UID (unit identifier) button illuminates an LED on both the front and rear of the chassis for easy system location in large stack configurations. The LED will remain on until the button is pushed a second time. Another UID button on the rear of the chassis serves the same function. This button has an LED built into it, which will illuminate when either the front or rear UID button is pushed.

3-3 Control Panel LEDs

In addition to the LEDs built into the power and UID buttons, each of the four control panels located on the front of the SC217 chassis has two LEDs that provide you with critical information related their own node. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Alert LED

This LED is illuminated when an alert condition occurs. A solid red light indicates an overheat condition in the system. A red light that flashes in one second intervals indicates a fan failure. A red light which flashes in four second intervals indicates a power failure. When notified of an alert, check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers and air shrouds are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the temperature is too high or a fan does not function properly.

NIC

Indicates network activity on any of the LAN ports when flashing

3-4 Drive Carrier LEDs

SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- Blue: When illuminated, this blue LED (on the front of the drive carrier) indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- Red: The red LED indicates a SAS/SATA drive failure. If one of the SAS/SATA drives fail, you should be notified by your system management software.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 2026TT-HTRF/HIBXRF/HIBQRF from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system. The unit may have more than one power supply cord. Disconnect both power supply cords before servicing to avoid electrical shock.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they might come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the server clean and free of clutter.

- The 2026TT-HTRF/HIBXRF/HIBQRF weighs approximately 85 lbs (38.6 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic Discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

- Put the serverboard and peripherals back into their antistatic bags when not in use.

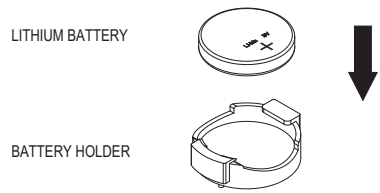
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 2026TT-HTRF/HIBXRF/HIBQRF is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Figure 4-1. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X8DTT series serverboard into the SC217HQ-R1400BP chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

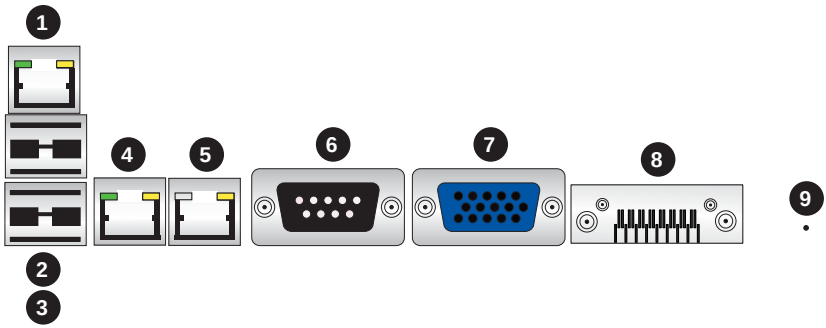
Unpacking

The serverboard is shipped in antistatic packaging to avoid electrostatic discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-1 below for the colors and locations of the various I/O ports.

Figure 5-1. I/O Ports



1. Dedicated IPMI LAN	6. COM1 Port
2. USB Port 1	7. VGA Port
3. USB Port 0	8. InfiniBand Port
4. LAN1	9. UID Button
5. LAN2	

Note: The InfiniBand port is included on the 2026TT-H6IBXRF and 2026TT-H6IBQRF only.

5-3 Processor and Heatsink Installation

When handling the processor, avoid placing direct pressure on the label area of the fan. Also, do not place the serverboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

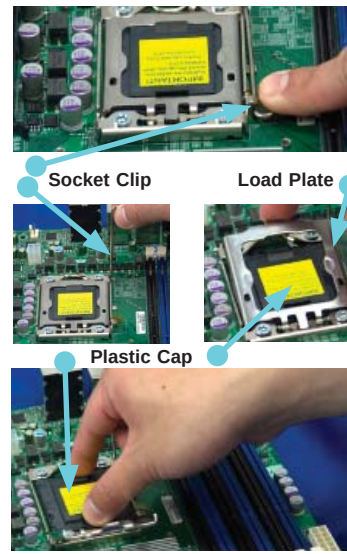
Notes:

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing LGA1366 Processors

1. Starting with CPU1, press the socket clip to release the load plate, which covers the CPU socket, from its locked position.
2. Gently lift the socket clip to open the load plate.
3. Hold the plastic cap at its north and south center edges to remove it from the CPU socket.

Note: The photos on this page and succeeding pages are for illustration purposes only. They do not necessarily reflect the exact product(s) described in this manual.



Holding the north & south edges

1. After removing the plastic cap, use your thumb and the index finger to hold the CPU at the north and south center edges.

2. Align the CPU key (the semi-circle cutout) with the socket key (the notch below the gold color dot on the side of the socket).

3. Once the CPU and the socket are aligned, carefully lower the CPU straight down into the socket. Do not rub the CPU against the surface of the socket or its pins to avoid damaging the CPU or the socket.

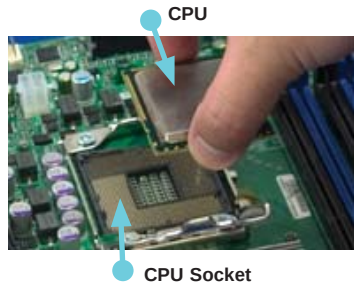
4. With the CPU in the socket, inspect the four corners of the CPU to make sure that it sits level and is properly installed.

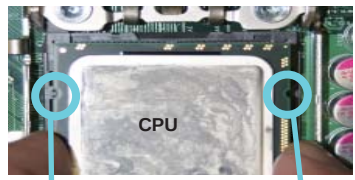
5. Once the CPU is securely seated in the socket, lower the CPU load plate to the socket.

6. Use your thumb to gently push the socket clip down to the clip lock.

7. Repeat for the CPU2 socket for a dual-processor configuration.

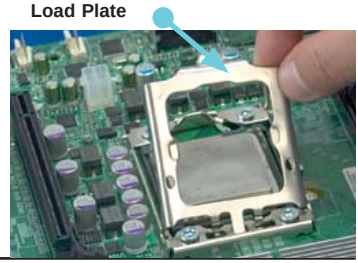
Important! Please save the plastic cap. The serverboard must be shipped with the plastic cap properly installed to protect the CPU socket pins. Shipment without the plastic cap properly installed may cause damage to the socket pins.





Align CPU keys with socket keys.

Load Plate



Installing a CPU Heatsink

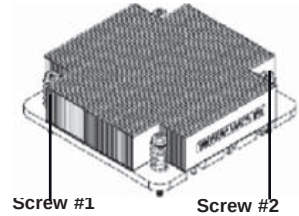
1. Remove power from the system and unplug the AC power cord from the power supply.

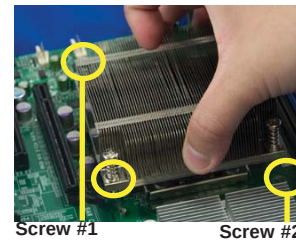
2. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

3. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.

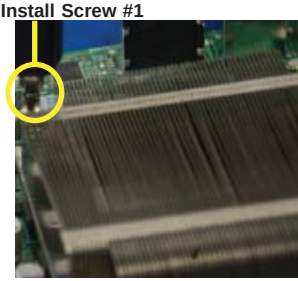
4. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)

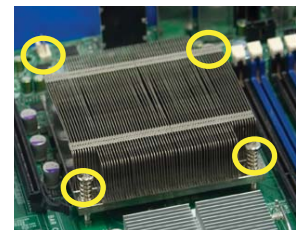
5. Add the two remaining screws then finish the installation by fully tightening all four screws.





Install Screw #1



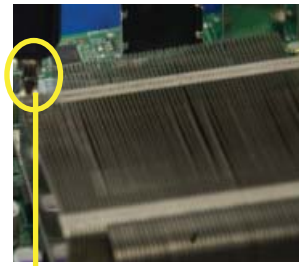


Note: See Chapter 6 for details on installing the air shroud.

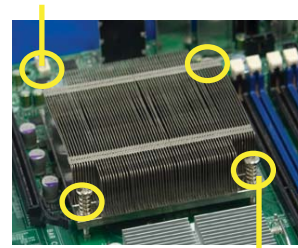
Removing the Heatsink

Warning! We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Remove power from the system and unplug the AC power cord from the power supply.
2. Using a screwdriver, loosen and remove the heatsink screws from the serverboard in the sequence as show in the picture on the right (two diagonal screws first, then the remaining two).
3. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink.)
4. Once the heatsink is loose, remove it from the CPU socket.
5. To reinstall the CPU and the heatsink, clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the CPU surface before reinstalling the heatsink.



Remove Screw #1



Remove Screw #2

5-4 Installing Memory

CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Memory Support

The X8DTT-H series serverboard supports up to 192 GB of Registered ECC or 48 GB of Unbuffered ECC/Non-ECC DDR3 1333 MHz/1066 MHz/800 MHz in 12 DIMM slots.

Note: Check the Supermicro web site for recommended DIMMs.

Installing Memory Modules

1. Insert each memory module vertically into a slot following the charts below. Pay attention to the notch along the bottom of the module to prevent inserting it incorrectly.

2. Gently press down on the DIMM until it snaps into place in the slot (see Figure 5-2).

3. Repeat for all DIMMs. See tables below and on following pages.

Populating Memory for Optimal Performance (Single CPU Configuration)						
	Branch 0		Branch 1		Branch 2	
3 DIMMs	P1 DIMM1A		P1 DIMM2A		P1 DIMM3A	
6 DIMMs	P1 DIMM1A	P1 DIMM1B	P1 DIMM2A	P1 DIMM2B	P1 DIMM3A	P1 DIMM3B

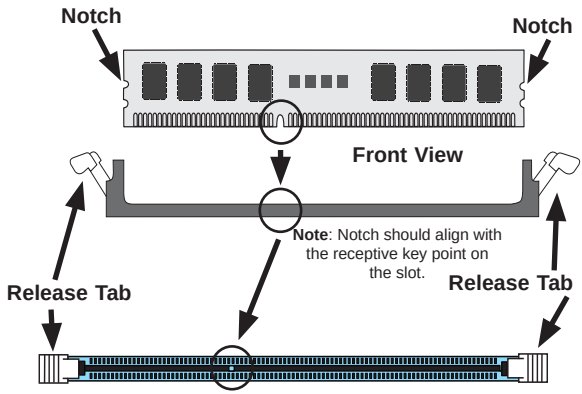
Populating Memory for Optimal Performance (Dual CPU Configuration)												
	CPU1						CPU2					
	Branch 0		Branch 1		Branch 3		Branch 0		Branch 1		Branch 3	
6 DIMMs	1A		2A		3A		1A		2A		3A	
12 DIMMs	1A	1B	2A	2B	3A	3B	1A	1B	2A	2B	3A	3B

DIMM Population Table				
DIMM Slots per Channel	**DIMMs Populated per Channel**	**DIMM Type (Reg.= Registered)**	**Speeds (in MHz)**	**Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)**
2	1	Reg. DDR3 ECC	800,1066,1333	SR or DR
2	1	Reg. DDR3 ECC	800,1066	QR
2	2	Reg. DDR3 ECC	800,1066	Mixing SR, DR
2	2	Reg. DDR3 ECC	800	Mixing SR, DR,QR

Figure 5-2. DIMM Installation

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Top View of DDR3 Slot

Due to the memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. Refer to the table below.

Possible System Memory Allocation & Availability			
System Device	Size	Physical Memory Remaining (Available) (3 GB Total System Memory)	Physical Memory Remaining (Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.00	3.99
Local APIC	4 KB	3.00	3.99
Area Reserved for the chipset	2 MB	3.00	3.99
I/O APIC (4 Kbytes)	4 KB	3.00	3.99
PCI Enumeration Area 1	256 MB	3.00	3.76
PCI Express (256 MB)	256 MB	3.00	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.00	3.01
VGA Memory	16 MB	2.85	2.85
TSEG	1 MB	2.84	2.84
Memory available to OS & other applications		2.84	2.84

5-5 Adding PCI Expansion Cards

PCI Express Slot

The 2026TT-HTRF/HIBXRF/HIBQRF includes four preinstalled riser cards designed specifically for use in the SC217HQ-R1400BP 2U rackmount chassis (one cards for each node). These riser cards support four low-profile PCI Express x16 expansion cards to fit inside the chassis.

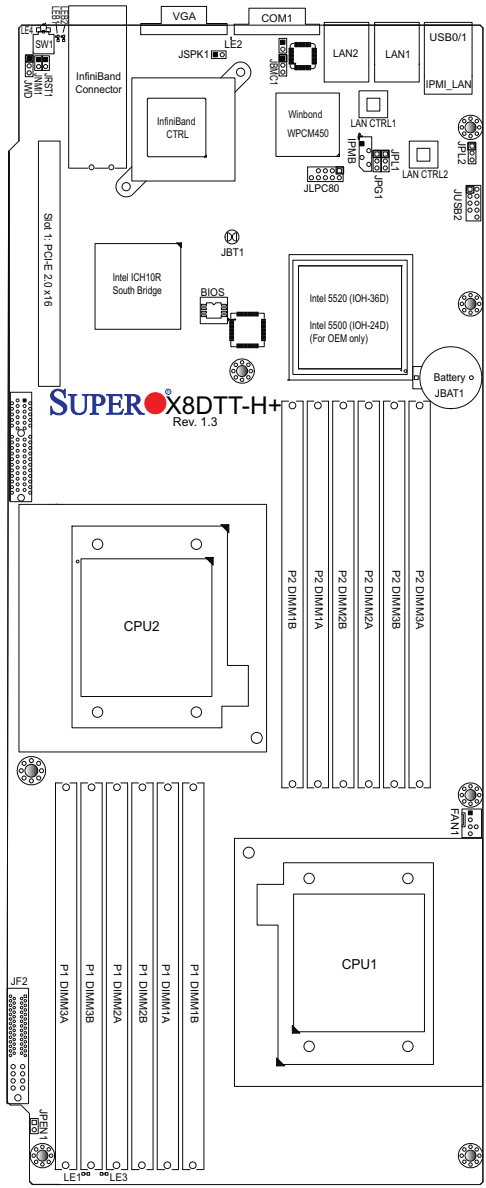
PCI Expansion Card Installation

A riser card has already been preinstalled into each serverboard. Perform the following steps to add a PCI expansion card:

1. Remove the PCI slot shield on the chassis by releasing the locking tab.
2. Insert the expansion card into the riser card.
3. Secure the expansion card with the locking tab.

5-6 Serverboard Details

Figure 5-3. X8DTT Series Serverboard Layout



X8DTT-H+ Series Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 5-8)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
COM1	COM1 Serial Port
FAN 1	Fan Header
InfiniBand	InfiniBand Connector (X8DTT-HIBXF+/-HIBQF+)
IPMI_LAN	LAN (RJ45) Port for IPMI 2.0 (X8DTT-HF+/-HIBXF+/-HIBQF+)
IPMB	IPMB Header (X8DTT-HF+/-HIBXF+/-HIBQF+)
JF2	Supermicro Proprietary Slot for Power, Control Panel & I-SATA Connections
JNMI1	NMI (Non-Maskable Interrupt) Header
JRST1	System Reset Header
JSPK1	Internal Speaker/Buzzer Header
LAN1/2	Gigabit Ethernet (RJ45) Ports
SW1	Unit Identifier Switch
USB0/1	Universal Serial Bus (USB) Ports 0/1
JUSB2	Front Accessible USB2/3 Headers
VGA	Video Port

LED	Description
LE1	Onboard Standby Power Warning LED Indicator
LE2	BMC Heartbeat LED Indicator
LE3	HDD/SATA LED Indicator
LE4	Rear Unit Identifier (UID) LED Indicator
LEB1	InfiniBand Link LED (X8DTT-HIBXF+/-HIBQF+)
LEB2	InfiniBand Activity LED (X8DTT-HIBXF+/-HIBQF+)

Note: Jumpers and connectors not indicated are for test purposes only.

5-7 Connector Definitions

Front Panel Accessible Add-on Card Header (JF2)

The JF2 add-on card header provides front access to the power supply, Serial ATA and Front Panel Control connections for the X8DTT-H series serverboard. Plug an add-on card into this header to use the functions indicated above. This header is designed specifically for a hot plug 2U daughter card.

NMI Header

The non-maskable interrupt header is located at JNMI1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions

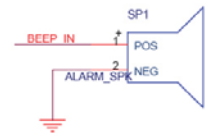
Pin#	Definition
1	Control
2	Ground

Internal Buzzer

The Internal Buzzer, located at JSPK1, can be used to provide audible alarms for various beep codes. See the table on the right for pin definitions..

Internal Buzzer Pin Definitions

Pin#		Definition
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker



IPMB I2C SMB

A System Management Bus header for the IPMI slot is located at IPMB. Connect the appropriate cable here to use the IPMB I2C connection on your system. See the table on the right for pin definitions..

IPMB Header Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Fan Header

The X8DTT-H series serverboard has one fan header on the serverboard. This 4-pin header is backward compatible with traditional 3-pin fans, however, fan speed control is only available for 4-pin fans. The fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in the BIOS. (The default setting is disabled.) See the table on the right for pin definitions.

Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB0/1) are located on the I/O back panel. In addition, another two USB connections (USB2/3) are located at JUSB2 to provide front chassis access. Connect USB cables to these USB ports/headers to use USB connections. (USB cables are not included). See the tables on the right for pin definitions.

Back Panel USB0/1 Pin Definitions

Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

Front Panel USB2/3 Pin Definitions

USB 2 Pin #	Definition	USB 3 Pin #	Definition
1	+5V	6	+5V
2	USB_PN2	7	USB_PN3
3	USB_PP2	8	USB_PP3
4	Ground	9	Ground
5	No Connection	10	Key

Serial Ports

One serial port is included on the serverboard. The COM port is located beside the VGA port. See the table on the right for pin definitions.

Serial Port Pin Definitions Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

(**NC**: No Connection)

Ethernet Ports

Two Ethernet ports are located next to USB0/1 on the IO backplane. In addition, an IPMI Dedicated LAN is located above USB0/1. These ports accept RJ45 type cables. See the table on the right for pin definitions.

Note 1: Please refer to the LED Indicator Section for LAN LED information.

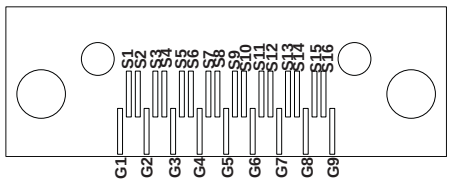
LAN Port Pin Definitions

Pin#	Definition	Pin#	Definition
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Yellow, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	88	Ground

(**NC**: No Connection)

InfiniBand Connection (X8DTT-HIBXF+/ HIBQF+)

The onboard InfiniBand connector is located on the serverboard backplane. This connection is primarily used for high-performance computing. See the table on the right for pin definitions.



Note: The "G" pins are for ground.

InfiniBand Pin Definitions

Pin #	Definition	Pin #	Definition
S1	Input Pair0:Pos	S9	Output Pair3:Pos
S2	Input Pair0:Neg	S10	Output Pair3:Neg
S3	Input Pair1:Pos	S11	Output Pair2:Pos
S4	Input Pair1:Neg	S12	Output Pair2:Neg
S5	Input Pair2:Pos	S13	Output Pair1:Pos
S6	Input Pair2:Neg	S14	Output Pair1:Neg
S7	Input Pair3:Pos	S15	Output Pair0:Pos
S8	Input Pair3:Neg	S16	Output Pair0:Neg

Front Panel Accessible Add-on Card Header (JF2)

The JF2 add-on card header provides front access to the power supply, Serial ATA and control panel connections for the X8DTT-H+ series motherboard. Plug an add-On card into this header to use the functions indicated above. This header is designed specifically for Supermicro-proprietary add-on cards.

System Reset

If System Reset (JRST1) is connected to a switch, then the system reset feature is enabled. See the table on the right for pin definitions.

Alarm Reset Pin Definitions

Pin#	Definition
1	3.3V
2	Ground

Unit Identifier Switches

Two Unit Identifier (UID) switches and LED indicators are located on the serverboard. The Front Panel UID Switch is located at pin 16 on JF2. The Rear UID Switch is located at SW1 next to the InfiniBand Connector. The Front Panel UID LED is located at pin 17 of JF2, and the Rear UID LED is located at LE4. When you press the UID switch on the front panel or on the back panel, both Rear UID LED and Front Panel UID LED indicators will be turned on. Press the UID switch again to turn off both LED Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service. See the table on the right for pin definitions.

Note: UID LED is supported by the physical switch or the BMC. When it is controlled by the physical switch, it will stay solid. When it is controlled by the BMC, it will blink.

UID Switch Pin Definitions

Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

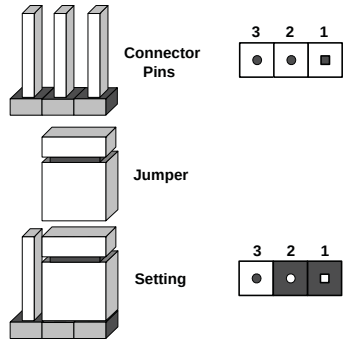
UID Switches & LEDs

Description	Location
FP Switch	Pin 16 on JF2
Rear Switch	SW1
FP UID LED (Blue LED)	Pin 17 on JF2
Rear UID LED	LE4

5-8 Jumper Settings

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the serverboard layout pages for jumper locations.

Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.



CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

LAN1/LAN2 Enable/Disable

Change the setting of jumper JPL1/JPL2 to enable or disable the LAN1 and LAN2 ports respectively. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

JWD1 enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have Watch Dog reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Note: When Watch Dog is enabled, you must write your own application software to disable the Watch Dog Timer.

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

5-9 Onboard Indicators

LAN1/LAN2 LEDs

The Ethernet ports (located beside the COM port) have two LEDs. On each Gb LAN port, one LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN1/LAN2 LEDs (Connection Speed Indicator)

LED Color	Definition
Off	No connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

InfiniBand LED Indicators (LEB1/LEB2)

Two InfiniBand LEDs (LEB1/LEB2) are included on the serverboard. The green LED (LEB1) is the InfiniBand Link LED. The yellow LED (LEB2) indicates activity. Refer to the tables on the right for details.

InfiniBand Link LED (LEB1)

Color	Definition
Solid Green	InfiniBand connected
Off	No connection

InfiniBand Activity LED (LEB2)

Color	Status	Definition
Yellow	Solid	InfiniBand active
Yellow	Dim	InfiniBand idle
Off	Off	No connection

Onboard Power LED

An Onboard Power LED is located at LE1 on the serverboard. When this LED is on, the system power is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the table at right for more information.

Onboard PWR LED

LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State

BMC Activity LED (LE2)

A BMC Heartbeat LED is located at LE2 on the serverboard. When LE2 is on, the BMC (Baseboard Management Controller) is active.

HDD/SATA LED (LE3)

An HDD/SATA LED is located at LE3 on the serverboard. This LED indicates the status of hard drive activitiy or SATA drive activity supported by the South Bridge.

HDD/SATA LED (LE3)	
Status	Definition
On	HDD/SATA connected
Off	No connection

Rear UID LED (LE4)

The Rear UID LED is located at LE4 on the serverboard. Refer to Section 5-7 for details.

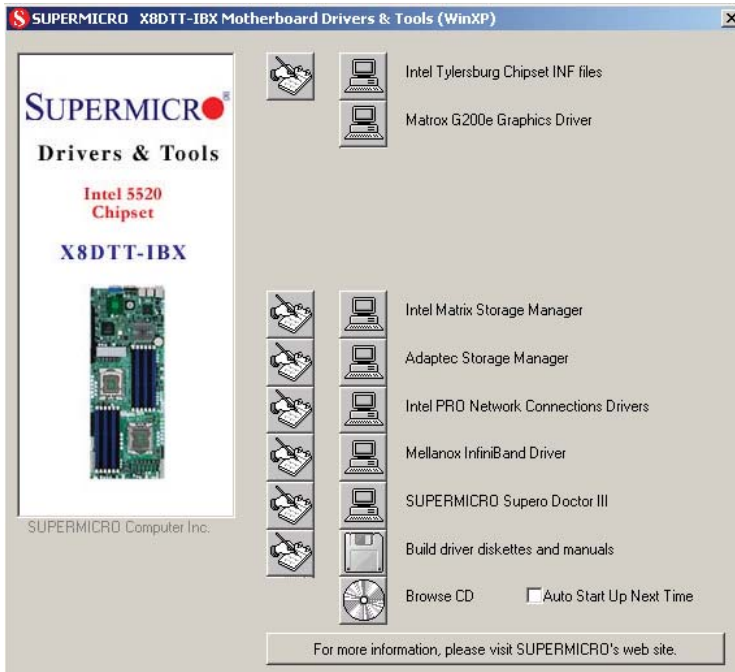
5-10 Serial ATA Ports

Serial ATA Connections

A Front Panel Add-On Card header is located at JF2 on the serverboard. This header provides onboard SATA support. Plug an add-on card in JF2 to use SATA connections. These connections provide serial-link signal transmission, which is faster than that of the traditional Parallel ATA.

5-11 Installing Additional Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

5-12 Configuring Super Doctor III

The Super Doctor III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Super Doctor III program included on the CD-ROM that came with your serverboard allows you to monitor the environment and operations of your system. Super Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Super Doctor III interface.

Notes: The default User Name and the Password are ADMIN.

In the Windows OS environment, the Super Doctor III settings take precedence over the BIOS settings. When first installed, Super Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
System Info | Health Info | Performance | Remote Control | Configuration | Administration | Systems Management | Report | Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: SD III Software Revision 1.0 can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/manuals/other/SDIII_User_Guide.pdf. For Linux, we will still recommend that you use Super Doctor II.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC217HQ-R1400 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows. The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View

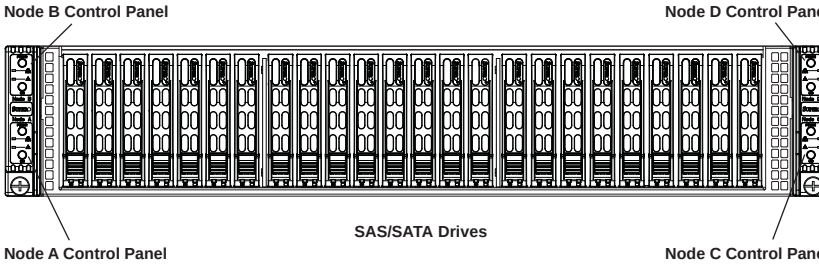
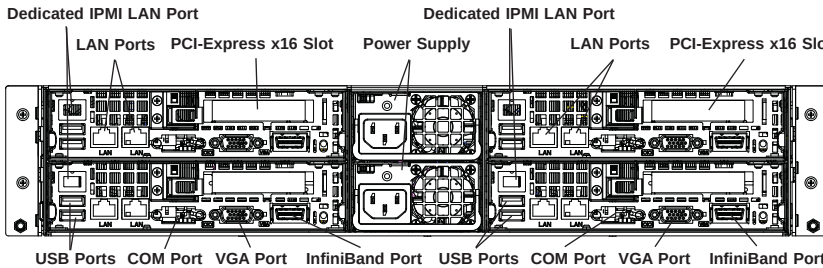


Figure 6-2. Chassis Rear View



6-2 Control Panel

Each control panel on the front of the chassis must be connected to the JF2 connector on its associated serverboard to provide you with system control buttons and status indicators.

These wires have been bundled together in a ribbon cable to simplify the connection. Connect the cable from JF2 on the serverboard to the control panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The LEDs inform you of system status for the serverboard it is connected to. See Chapter 3 for details on the LEDs and the control panel buttons.

6-3 System Fans

The system has four hot-swappable 8-cm PWM fans to provide the cooling for both nodes. The fans connect directly to the backplane but receive their power from the serverboard they are connected to logically. Fan speed may be controlled by a setting in BIOS (see Chapter 7).

Fan Configuration

In the 2U Twin, each node (serverboard) controls the two fans that reside on its side of the chassis. This means that two nodes will share control for two fans. If the fan speed settings in BIOS are different for these two nodes, the BIOS setting with the higher fan speed will apply. In the event that one of the serverboard drawers is removed, then the remaining node/serverboard will operate both fans.

Note: Due to this configuration, both nodes on the same side of the chassis as the failed fan must be powered down before replacing the fan.

System Fan Failure

If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will blink on and off (about once per second). Replace any failed fan at your earliest convenience with the same type and model. See note above about powering down the nodes associated with the failed fan befire replacing.

Changing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis cover open.)

2. Remove the failed fan's wiring from the backplane.

3. Lift the fan up and out of the chassis.

4. Place the replacement fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.

5. Confirm that the fan is working properly before replacing the chassis cover.

6-4 Hard Drive Installation/Removal

Overview

The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the system. For this reason, even empty carriers without drives installed must remain in the chassis.

Because of their hot-swap capability, you do not need to access the inside of the chassis or power down the system to install or replace hard drives.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the hard drives.

Warning! Use caution when working around the hard drive backplane. Do not touch the backplane with any metal objects and make sure no cables touch the backplane. Also, regardless of how many drives are installed, all twelve drive carriers must remain in the chassis to maintain proper airflow.

Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm

Installing and Removing Hard Drives

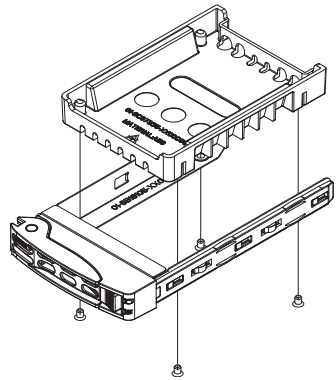
Mounting a Hard Drive in a Carrier

1. Install the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with four screws, as shown in Figure 6-3.

3. Use the open handle to replace the drive carrier into the chassis. Make sure to fully close the drive carrier handle.

Figure 6-3. Mounting a Hard Drive in a Carrier



Installing/Removing Hot-swap Drives

1. To remove a carrier, push the release button located beside the drive LEDs.

2. Swing the handle fully out and use it to pull the unit straight out (see Figure 6-4).

Be aware that powering down a node will power down all the hard drives that are logically associated with it (as shown in Figure 6-6).

Figure 6-4. Removing a Hard Drive

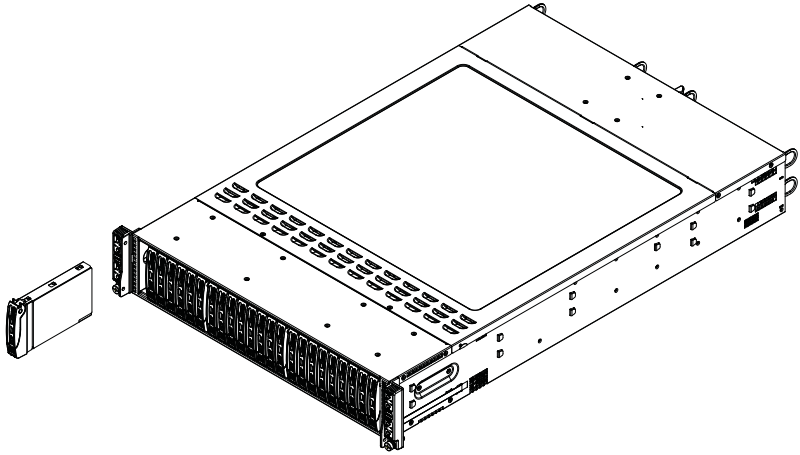
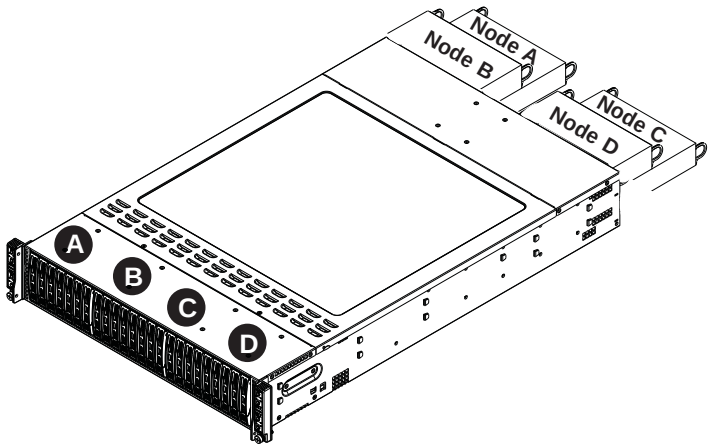


Figure 6-5. Drives and Nodes: Logical Configuration



Note: see Figure 6-1 for the locations of the control panels that are associated with each node.

6-5 Node Installation/Removal

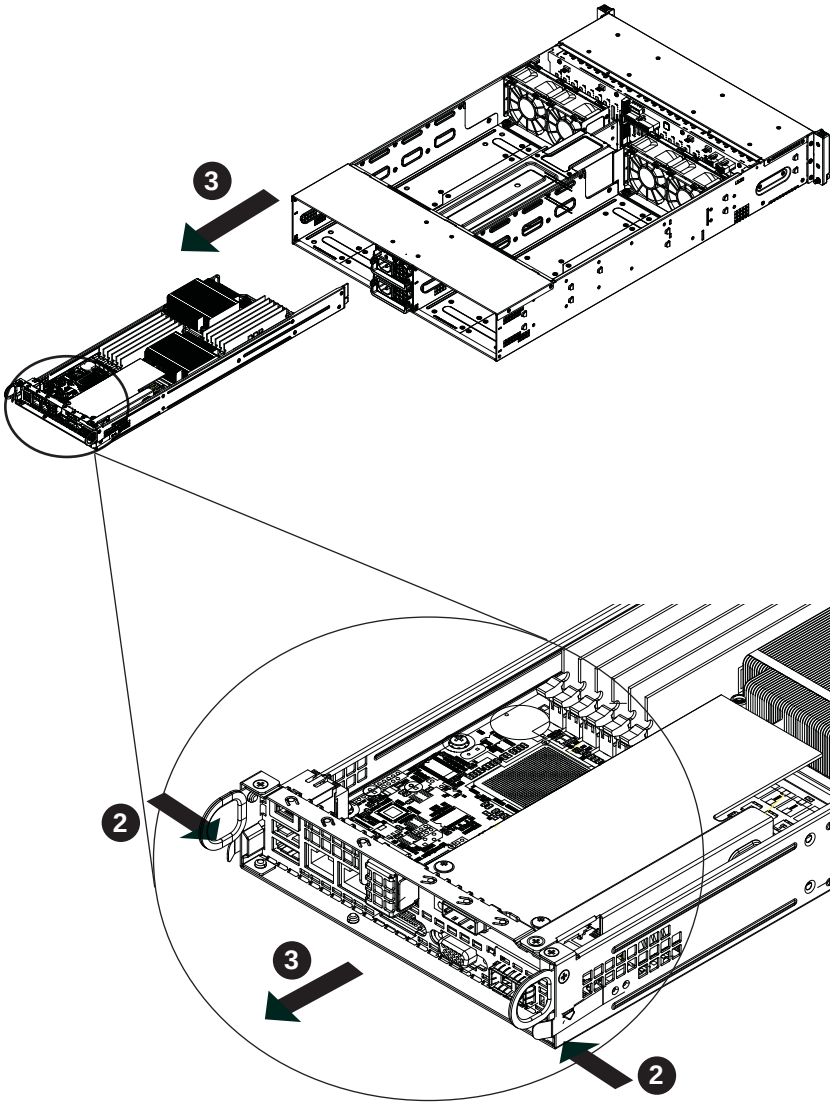
As with any server system, power must be removed from the serverboard when upgrading or installing memory or processors. In the 2U Twin server, the serverboards (nodes) are capable of being hot-swapped from the chassis, allowing one to be powered down for servicing while the other continues operating.

Important! Removing a node from the server affects the airflow throughout the system. For this reason, nodes should be removed, serviced and replaced as quickly as possible. Also note that powering down a node will power down all the hard drives that are logically associated with it.

Removing a System Node

1. Depress the power button on the control panel to power down the node.
2. There are two latches located below the handles at the rear of the node tray. Push both of these inward.
3. While pushing the latches inward, grasp both handles and pull the node from the chassis.
4. Perform any service needed to the node in a timely manner.
5. Reinstall the node by pushing it into its bay until firmly seated.

Figure 6-7. Removing a System Node



Note: numbers correspond to the procedural steps as described on the previous page.

6-6 Installing the Air Shrouds

Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. The SC217 chassis air shroud does not require screws to set up. Four identical air shrouds are required, one in each serverboard drawer.

Installing an Air Shroud

1. Confirm that all four fans are in place and working properly

2. Place the first air shroud into the serverboard drawer so that it sits behind the system fans and goes over the top of the serverboard and its components.

3. Repeat the procedure for the remaining serverboard drawer.

6-7 Power Supply

The SuperServer 2026TT-HxRF series server has two 1400 watt power supply modules to provide redundant power for the system. If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The LED on the control panel will flash slowly (about 4 seconds on and 4 off) and remain flashing until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

Removing/Replacing the Power Supply (Figure 6-8)

1. Disconnect the AC power cord from the failed module.

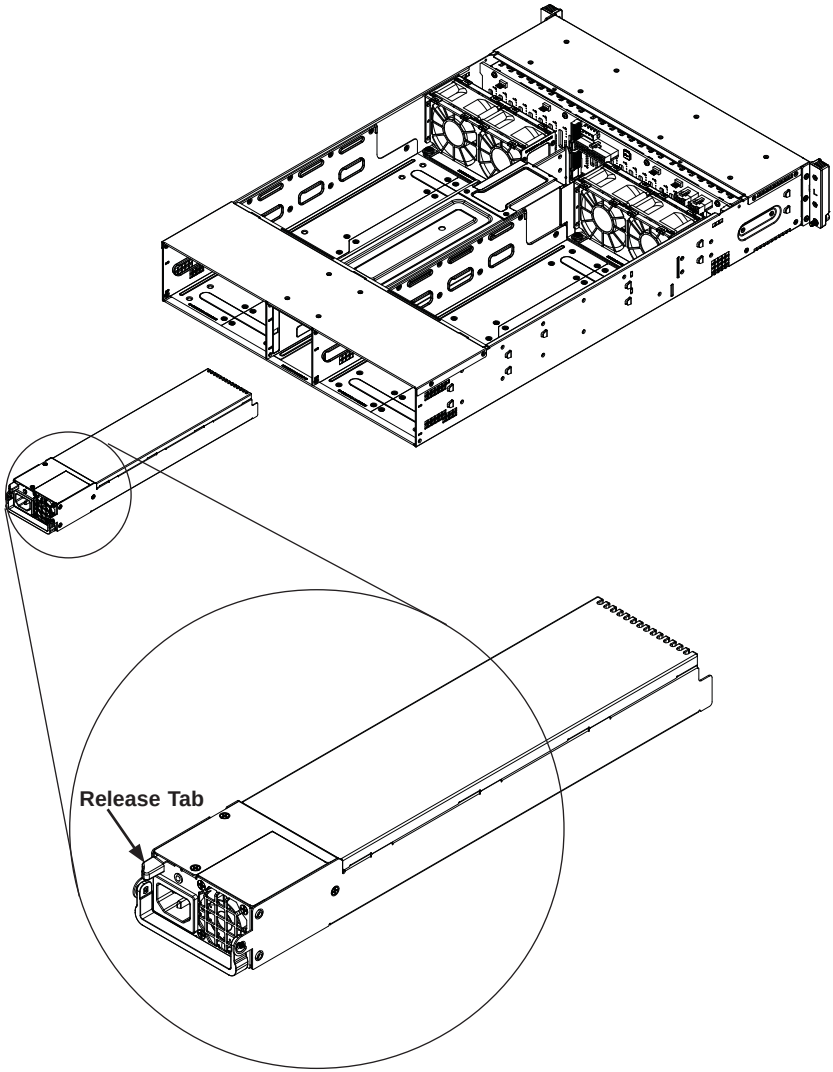
2. Push the colored release tab to the side and pull the power module out with the handle provided.

3. Replace the failed power supply module with the exact same model from Supermicro.

4. Carefully insert the new module into position in the chassis and push it in until fully seated. You should see the LED on the rear of the module turn amber showing that power (from the backup module) is present.

5. Reconnect the AC power cord to the new module.

Figure 6-8. Removing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X8DTT-HF+/HIBXF+/HIBQF+. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

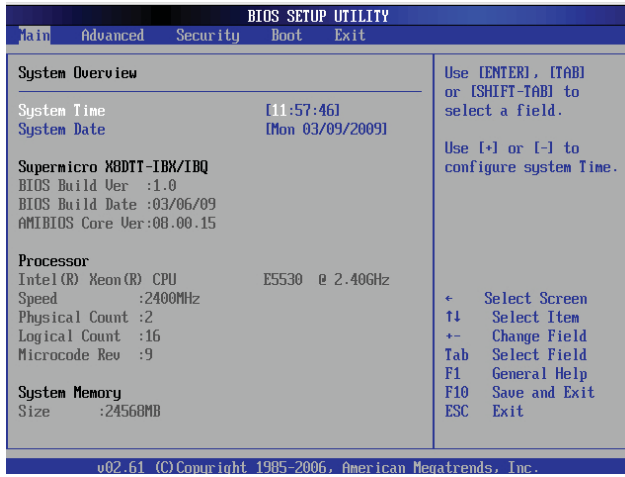
Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview

The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in

Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro X8DTT/-F/-IBX/-IBXF/-IBQ/-IBQF

BIOS Build Version

This item displays the BIOS revision used in your system.

BIOS Build Date

This item displays the date when this BIOS was completed.

AMI BIOS Core Version

This item displays the revision number of the AMI BIOS Core upon which your BIOS was built.

Processor

The AMI BIOS will automatically display the status of the processor used in your system:

CPU Type

This item displays the type of CPU used in the motherboard.

Speed

This item displays the speed of the CPU detected by the BIOS.

Physical Count

This item displays the number of processors installed in your system as detected by the BIOS.

Logical Count

This item displays the number of CPU Cores installed in your system as detected by the BIOS.

Micro_code Revision

This item displays the revision number of the BIOS Micro_code used in your system.

System Memory

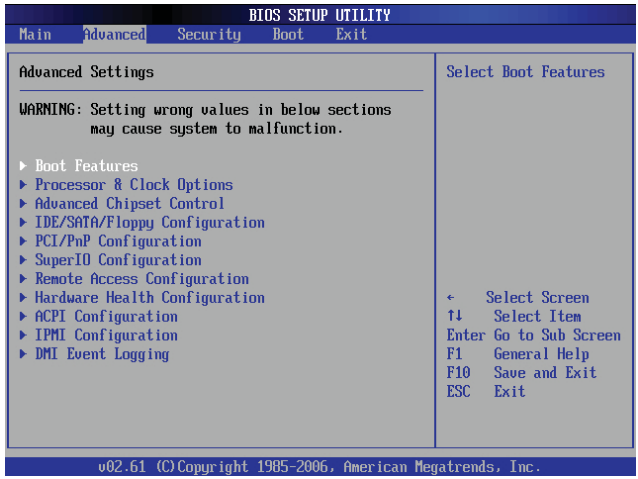
This displays the size of memory available in the system:

Size

This item displays the memory size detected by the BIOS.

7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:



▶BOOT Features

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system boot. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Enabled and Disabled.

AddOn ROM Display Mode

This sets the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

Hit 'Del' Message Display

This feature displays "Press DEL to run Setup" during POST. The options are **Enabled** and Disabled.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are Enabled and **Disabled.**

▶Power Configuration

Power Button Function

If set to Instant_Off, the system will power off immediately as soon as the user hits the power button. If set to 4_Second_Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant_Off** and 4_Second_Override.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power-On, Power-Off and **Last State**.

Watch Dog Timer

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

▶Processor and Clock Options

This submenu allows the user to configure the Processor and Clock settings.

Ratio CMOS Setting

This option allows the user to set the ratio between the CPU Core Clock and the FSB Frequency. (**Note**: if an invalid ratio is entered, the AMI BIOS will restore the setting to the previous state.) The default setting depends on the type of CPU installed on the motherboard. The default setting for the CPU installed in your motherboard is **[16]**. Press "+" or "-" on your keyboard to change this value.

C1E Support

Select Enabled to use the feature of Enhanced Halt State. C1E significantly reduces the CPU's power consumption by reducing the CPU's clock cycle and voltage during a "Halt State." The options are Disabled and **Enabled**.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware pre fetcher will pre fetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Execute-Disable Bit Capability (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Simultaneous Multi-Threading (Available when supported by the CPU)

Set to Enabled to use the Simultaneous Multi-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

Active Processor Cores

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are **All,** 1 and 2.

Intel® EIST Technology

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consump-

tion and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disable (Disable GV3) and **Enable (Enable GV3)**.

Intel® TurboMode Technology

Select Enabled to use the Turbo Mode to boost system performance. The options are **Enabled** and Disabled.

Intel® C-STATE Tech

If enabled, C-State is set by the system automatically to either C2, C3 or C4 state. The options are Disabled and **Enabled**.

C-State package limit setting

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are **Auto**, C1, C3, C6 and C7.

C1 Auto Demotion

When enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 based on un-core auto-demote information. The options are Disabled and **Enabled.**

C3 Auto Demotion

When enabled, the CPU will conditionally demote C6 or C7 requests to C3 based on un-core auto-demote information. The options are Disabled and **Enabled.**

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled.

▶Advanced Chipset Control

The items included in the Advanced Settings submenu are listed below:

▶CPU Bridge Configuration

QPI Links Speed

This feature selects QPI's data transfer speed. The options are Slow-mode, and **Full Speed**.

QPI Frequency

This selects the desired QPI frequency. The options are **Auto**, 4.800 GT, 5.866GT, 6.400 GT.

QPI L0s and L1

This enables the QPI power state to low power. L0s and L1 are automatically selected by the motherboard. The options are Disabled and **Enabled.**

Memory Frequency

This feature forces a DDR3 frequency slower than what the system has detected. The available options are **Auto**, Force DDR-800, Force DDR-1066, and Force DDR-1333.

Memory Mode

The options are **Independent**, Channel Mirror, Lockstep and Sparing.

- Independent - All DIMMs are available to the operating system.
- Channel Mirror - The motherboard maintains two identical copies of all data in memory for redundancy.
- Lockstep - The motherboard uses two areas of memory to run the same set of operations in parallel.
- Sparing - A preset threshold of correctable errors is used to trigger fail-over. The spare memory is put online and used as active memory in place of the failed memory.

Demand Scrubbing

A memory error-correction scheme where the Processor writes corrected data back into the memory block from where it was read by the Processor. The options are Enabled and **Disabled**.

Patrol Scrubbing

A memory error-correction scheme that works in the background looking for and correcting resident errors. The options are Enabled and **Disabled**.

NUMA Support

Select Enabled to use the feature of Non-Uniform Memory Access to improve CPU performance. The options are **Enabled** and Disabled.

Memory ECC Error Threshold

This feature allows the user to set the threshold for the ECC memory errors. The default setting is **2047**.

Throttling - Closed Loop/Throttling - Open Loop

Throttling improves reliability and reduces power in the processor by automatic voltage control during processor idle states. Available options are Disabled and Enabled. If Enabled, the following items will appear:

Hysteresis Temperature

Temperature Hysteresis is the temperature lag (in degrees Celsius) after the set DIMM temperature threshold is reached before Closed Loop Throttling begins. The options are Disabled, **1.5°C**, 3.0°C, and 6.0°C.

Guardband Temperature

This is the temperature which applies to the DIMM temperature threshold. Each step is in 0.5°C increment. The default is **[006]**. Press "+" or "-" on your keyboard to change this value.

Inlet Temperature

This is the temperature detected at the chassis inlet. Each step is in 0.5°C increment. The default is **[070]**. Press "+" or "-" on your keyboard to change this value.

Temperature Rise

This is the temperature rise to the DIMM thermal zone. Each step is in 0.5°C increment. The default is **[020]**. Press "+" or "-" on your keyboard to change this value.

Air Flow

This is the air flow speed to the DIMM modules. Each step is one mm/sec. The default is **[1500]**. Press "+" or "-" on your keyboard to change this value.

Altitude

This feature defines how many meters above or below sea level the system is located. The options are **Sea Level or Below,** 1~300, 301~600, 601~900, 901~1200, 1201~1500, 1501~1800, 1801~2100, 2101~2400, 2401~2700, 2701~3000.

DIMM Pitch

This is the physical space between each DIMM module. Each step is in 1/1000 of an inch. The default is **[400]**. Press "+" or "-" on your keyboard to change this value.

▶North Bridge Configuration

This feature allows the user to configure the settings for the Intel IOH chip.

Crystal Beach/DMA (Direct Memory Access)

This feature works with the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (**Note**: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card.) When this feature is set to Enabled, it will enhance overall system performance by providing direct memory access for data transferring. The options are Enabled and **Disabled.**

Intel VT-d

Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

IOH PCIE Max Payload Size

Some add-on cards perform faster with the coalesce feature, which limits the payload size to 128 MB; while others, with a payload size of 256 MB which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are 256 MB and **128MB**.

PCI-E Port 1 Link Select

This feature allows the user to configure the IOH link settings for the PCI-E Port 1. The options are X4X4X4X4, X4X4X8, X8X4X4, X8X8, and **X16.**

▶SouthBridge Configuration

This feature allows the user to configure the settings for the Intel ICH South Bridge chipset.

USB Functions

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are: Disabled, 2 USB ports, 4 USB ports, 6 USB ports, 8 Ports, 10 Ports and **12 USB ports**.

Legacy USB Support

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vise versa. The settings are Disabled, and **Enabled**.

USB 2.0 Controller

Select Enabled to activate the onboard USB 2.0 controller. The options are **Enabled** and Disabled.

USB 2.0 Controller Mode

This setting allows you to select the USB 2.0 Controller mode. The options are **Hi-Speed (480 Mbps**) and Full Speed (12 Mbps).

BIOS EHCI Hand-Off

Select Enabled to enable BIOS Enhanced Host Controller Interface support to provide a workaround solution for an operating system that does not have EHCI Hand-Off support. When enabled, the EHCI Interface will be changed from the BIOS-controlled to the OS-controlled. The options are Disabled and **Enabled**.

▶IDE/SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE devices and displays the following items:

SATA#1 Configuration

If Compatible is selected, it sets SATA#1 to legacy compatibility mode, while selecting Enhanced sets SATA#1 to native SATA mode. The options are Disabled, **Compatible** and Enhanced.

Configure SATA#1 as

This feature allows the user to select the drive type for SATA#1. The options are **IDE,** RAID and AHCI. (When the option-RAID is selected, the item-ICH RAID Code Base will appear. When the option-AHCI is selected, the item-SATA AHCI will be available.)

ICH RAID Code Base (This feature is available when the option-RAID is selected)

Select Intel to enable Intel's SATA RAID firmware to configure Intel's SATA RAID settings. Select Adaptec to enable Adaptec's SATA RAID firmware to configure Adaptec's SATA RAID settings. The options are **Intel** and Adaptec.

SATA AHCI (This feature is available when the option-AHCI is selected)

Select Enable to enable the function of Serial ATA Advanced Host Interface. (Take caution when using this function. This feature is for advanced programmers only.) The options are Enabled and **Disabled**. If the option-Enabled is selected, the following item will display.

Hot Plug (This feature is available when the option-Enabled is selected)

Select Enable to enable the hot plug function for the SATA devices. The options are **Enabled** and Disabled.

SATA#2 Configuration

Selecting Enhanced will set SATA#2 to native SATA mode. The options are Disabled, and **Enhanced**.

Primary IDE Master/Slave, Secondary IDE Master/Slave, Third IDE Master, and Fourth IDE Master

These settings allow the user to set the parameters of Primary IDE Master/Slave, Secondary IDE Master/Slave, Third and Fourth IDE Master slots. Hit <Enter> to activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are:

Type

Select the type of device connected to the system. The options are Not Installed, **Auto**, CD/DVD and ARMD.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs.

Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs.

Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs.

Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs.

Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer bandwidth of 32-Bits. Select Enabled to enable 32-Bit data transfer.

DMA Mode

Select Auto to allow the BIOS to automatically detect IDE DMA mode when the IDE disk drive support cannot be determined.

Select SWDMA0 to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MBs.

Select SWDMA1 to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MBs.

Select SWDMA2 to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MBs.

Select MWDMA0 to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MBs.

Select MWDMA1 to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MBs.

Select MWDMA2 to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MBs.

Select UDMA0 to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MBs. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2.

Select UDMA1 to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MBs.

Select UDMA2 to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MBs.

Select UDMA3 to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 66.6 MBs.

Select UDMA4 to allow the BIOS to use Ultra DMA mode 4. It has a data transfer rate of 100 MBs.

Select UDMA5 to allow the BIOS to use Ultra DMA mode 5. It has a data transfer rate of 133 MBs.

Select UDMA6 to allow the BIOS to use Ultra DMA mode 6. It has a data transfer rate of 133 MBs. The options are **Auto**, SWDMAn, MWDMAn, and UDMAn.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMI BIOS to automatically detect hard disk drive support. Select Disabled to prevent the AMI BIOS from using the S.M.A.R.T. Select Enabled to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32Bit Data Transfer

Select Enable to enable the function of 32-bit IDE data transfer. The options are **Enabled** and Disabled.

IDE Detect Timeout (sec)

Use this feature to set the time-out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and **35**.

▶PCI/PnP Configuration

Clear NVRAM

This feature clears the NVRAM during system boot. The options are **No** and Yes.

Plug & Play OS

Selecting Yes allows the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

PCI IDE BusMaster

When enabled, the BIOS uses PCI bus mastering for reading/writing to IDE drives. The options are Disabled and **Enabled.**

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable the onboard LAN1 or LAN2 Option ROM. This is to boot computer using a network interface. The options are Enabled and **Disabled.**

▶Super IO Device Configuration

Serial Port1 Address/ Serial Port2 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3. The options for Serial Port2 are Disabled, **2F8/IRQ3**, 3E8/IRQ4, and 2E8/IRQ3.

▶Remote Access Configuration

Remote Access

This allows the user to enable the Remote Access feature. The options are Disabled and **Enabled**.

If Remote Access is set to Enabled, the following items will display:

Serial Port Number

This feature allows the user decide which serial port to be used for Console Redirection. The options are COM 1 and **COM 2.**

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, n 1**; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None**, Hardware, and Software.

Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power-On Self-Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and **Always**.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection. The options are **ANSI**, VT100, and VT-UTF8.

VT-UTF8 Combo Key Support

A terminal keyboard definition that provides a way to send commands from a remote console. The options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature defines the length of time in seconds to display memory information. The options are **No Delay,** Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

▶Hardware Health Monitor

This feature allows the user to monitor system health and review the status of each item as displayed.

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

Warning! 1.Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed. 2. To avoid possible system overheating, please be sure to provide adequate airflow to your system.

The options are:

- The Early Alarm: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

- **The Default Alarm**: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5ºC above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling. In both the alarms above, please take immediate action as shown below.

CPU Temperature/System Temperature

This feature displays current temperature readings for the CPU and the System.

The following items will be displayed for your reference only:

CPU Temperature

The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C). The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems.

Notes:

1. The system may shut down if it continues for a long period to prevent damage to the CPU.

2. The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature: The system temperature will be displayed (in degrees in Celsius and Fahrenheit) as it is detected by the BIOS.

Fan Speed Control Monitor

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select "Disabled, (Full Speed @12V)" to disable the fan speed control function and allow the onboard fans to constantly run at the full speed (12V). The Options are: 1. **Disabled (Full Speed)**, 2. Server Mode, 3. Workstation Mode.

Fan1 ~ Fan 4 Reading

This feature displays the fan speed readings from fan interfaces Fan1 through Fan5.

CPU1 Vcore, CPU2 Vcore, +5Vin, +12Vcc (V), VP1 DIMM, VP2 DIMM, 3.3Vcc (V), and Battery Voltage.

▶ACPI Configuration

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

ACPI Version Features

The options are **ACPI v1.0**, ACPI v2.0 and ACPI v3.0. Please refer to ACPI's website for further explanation: http://www.acpi.info/.

ACPI APIC Support

Select Enabled to include the ACPI APIC Table Pointer in the RSDT (Root System Description Table) pointer list. The options are **Enabled** and Disabled.

APIC ACPI SCI IRQ

When this item is set to Enabled, APIC ACPI SCI IRQ is supported by the system. The options are Enabled and **Disabled**.

Headless Mode

This feature is used to enable system to function without a keyboard, monitor or mouse attached The options are Enabled and **Disabled**.

High Performance Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are Enabled and **Disabled**.

▶General WHEA Configuration

WHEA Support

Select Enabled to enable Windows Hardware Error Architecture (WHEA) support which will provide a common infrastructure for handling hardware errors on Windows platforms in order to reduce system crashes due to hardware errors and improvesystem recovery and health monitoring. The default setting is **Enabled.**

▶IPMI Configuration (X8DTT-HF/-HIBXF/-HIBQF Only)

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.

Status of BMC

Baseboard Management Controller (BMC) manages the interface between system management software and platform hardware. This is an informational feature which returns the status code of the BMC micro controller.

IPMI Firmware Revision

This item indicates the revision number of the current IPMI Firmware.

▶View BMC System Event Log

This feature displays the BMC System Event Log (SEL). It shows the total number of entries of BMC System Events. To view an event, select an Entry Number and pressing <Enter> to display the information as shown in the screen.

- Total Number of Entries
- SEL Entry Number
- SEL Record ID
- SEL Record Type
- Timestamp
- Generator ID
- Event Message Format User
- Event Sensor Type
- Event Sensor Number,

▶Set LAN Configuration

Set this feature to configure the IPMI LAN adapter with a network address as shown in the following graphics.

- **Channel Number** - Enter the channel number for the SET LAN Config command. This is initially set to **[1]**. Press "+" or "-" on your keyboard to change the Channel Number.
- **Channel Number Status** - This feature returns the channel status for the Channel Number selected above: "Channel Number is OK" or "Wrong Channel Number".

▶IP Address Configuration

Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255 as shown in the screen below.

Parameter Selector

Use this feature to select the parameter of your IP Address configuration.

IP Address Source

Select the source of this machine's IP address. If Static is selected, you will need to know and enter manually the IP address of this machine below. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network it is attached to, and request the next available IP address. The options are **DHCP** and Static.

The following items are assigned IP addresses automatically if DHCP is selected under IP Address Source above:

IP Address

The BIOS will automatically enter the IP address of this machine; however it may be over-ridden. IP addresses are 6 two-digit hexadecimal numbers separated by dots.

Current IP Address in BMC

This item displays the current IP address used for your IPMI connection.

▶MAC Address Configuration

Enter the Mac address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255 as shown in the screen below.

Parameter Selector

Use this feature to select the parameter of your Mac Address configuration.

Mac Address

The BIOS will automatically enter the Mac address of this machine; however it may be over-ridden. Mac addresses are 6 two-digit hexadecimal numbers separated by dots.

Current Mac Address in BMC

This item displays the current Mac address used for your IPMI connection.

▶Subnet Mask Configuration

Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

Parameter Selector

Use this feature to select the parameter of your Subnet Masks configuration.

Subnet Mask

This item displays the current subnet mask setting for your IPMI connection.

Current Subnet Mask in BMC

This item displays the current subnet mask used for your IPMI connection.

▶Gateway Address Configuration

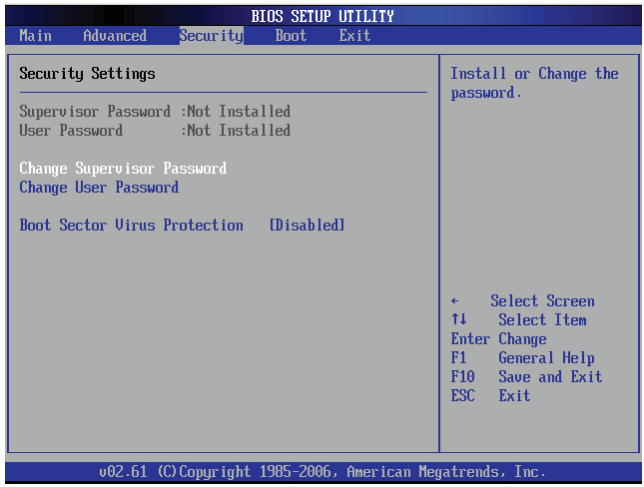
Enter the gateway address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255 as shown in the screen below.

Parameter Selector

Use this feature to select the parameter of your Gateway Address settings.

Gateway Address

The BIOS will automatically enter the Gateway address of this machine; however it may be over-ridden. Gateway addresses are 6 two-digit hexadecimal numbers separated by dots.



Current Gateway Address in BMC

This item displays the current Gateway address used for your IPMI connection.

▶DMI Event Log

View Event Log

Use this option to view the System Event Log.

Mark all events as read

This option marks all events as read. The options are OK and Cancel.

Clear event log

This option clears the Event Log memory of all messages. The options are OK and **Cancel.**

7-4 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

Supervisor Password

This item indicates if a Supervisor password has been entered for the system. "Not Installed" means a Supervisor password has not been used.

User Password

This item indicates if a user password has been entered for the system. "Not Installed" means that a user password has not been used.

Change Supervisor Password

Select this feature and press <Enter> to access the submenu, and then type in a new Supervisor Password.

User Access Level (Available when Supervisor Password is set as above)

Available options are **Full Access**: grants full User read and write access to the Setup Utility, View Only: allows access to the Setup Utility but the fields cannot be changed, Limited: allows only limited fields to be changed such as Date and Time, No Access: prevents User access to the Setup Utility.

Change User Password

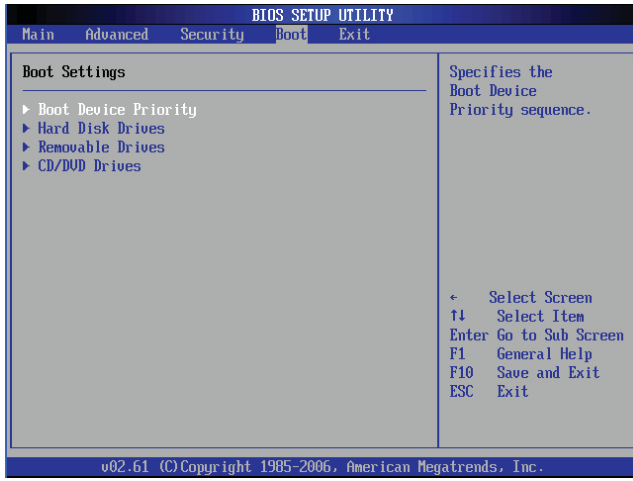
Select this feature and press <Enter> to access the submenu , and then type in a new User Password.

Clear User Password (Available only when User Password has been set)

This item allows you to clear a user password after it has been entered.

Password Check

This item allows you to check a password after it has been entered. The options are **Setup** and Always.



Boot Sector Virus Protection

When Enabled, the AMI BOIS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-5 Boot Configuration

Use this feature to configure boot settings.

▶Boot Device Priority

This feature allows the user to specify the sequence of priority for the Boot Device. The settings are 1st boot device, 2nd boot device, 3rd boot device, 4th boot device, 5th boot device and Disabled.

- 1st Boot Device - [USB: XXXXXXXXX]
- 2nd Boot Device - [CD/DVD: XXXXXXXXX]

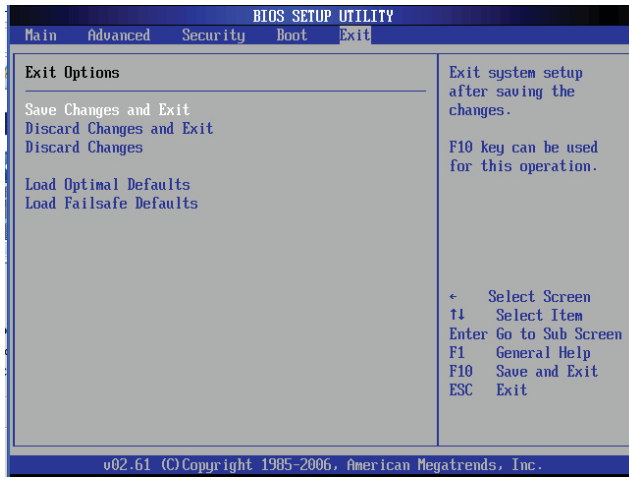
▶Hard Disk Drives

This feature allows the user to specify the boot sequence from all available hard disk drives. The settings are Disabled and a list of all hard disk drives that have been detected (i.e., 1st Drive, 2nd Drive, 3rd Drive, etc).

- 1st Drive - [SATA: XXXXXXXXX]

▶Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.



- 1st Drive - [USB: XXXXXXXXX]
- 2nd Drive

▶CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD Drives (i.e., 1st Drive, 2nd Drive, etc).

7-6 Exit Options

Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

7-7 BIOS Recovery

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you need to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

How to Recover the AMIBIOS Image (the Main BIOS Block)

An AMIBIOS flash chip consists of a boot sector block, and a main BIOS code block (a main BIOS image). The boot sector block contains critical BIOS code, including memory detection and recovery code to be used to flash a new BIOS image if the original BIOS Image is corrupted. When the system is powered on, the boot sector code executes first. Once it is completed, the main BIOS code will continue with system initialization and complete the bootup process.

Note: BIOS Recovery described below is used when the main BIOS block crashes. However, when the BIOS Boot sector crashes, you will need to send the motherboard back to Supermicro for RMA repairs.

Boot Sector Recovery from a USB Device

This feature allows the user to recover a BIOS image using a USB device without additional utilities needed. A user can download the BIOS image into a USB flash device, and name the file "SUPER.ROM" for the recovery process to load the file. A USB flash device such as a USB Flash Drive, a USB CDROM or a USB CDRW device can be used for this purpose,

1. Insert the USB device that contains the new BIOS image (the ROM files) saved in a root directory into your USB drive.

2. While turning the power on, press and hold <Ctrl> and <Home> at the same time until the USB Access LED Indicator comes on. This might take a few seconds.

3. Once the USB drive LED is on, release the <Ctrl> and <Home> keys. AMIBIOS will issue beep codes to indicate that the BIOS ROM file is being updated.

4. When BIOS flashing is completed, the computer will reboot. Do not interrupt the flashing process until it is completed.

Boot Sector Recovery from an IDE CD-ROM

This process is almost identical to the process of Boot Sector Recovery from a USB device, except that the BIOS image file is loaded from a CD-ROM. Use a CD-R or CD-RW drive to burn a CD with the BIOS image file in it, and name the file "SUPER.ROM" for the recovery process to load the file.

Boot Sector Recovery from a Serial Port ("Serial Flash")

This process, also known as "Serial Flash," allows the user to use a serial port to load a BIOS image for Boot Sector recovery. This feature is usually used for embedded systems that rely on a serial port for remote access and debugging.

Requirements

In order to use Serial Flash for Boot Sector Recovery, you will need to meet the following requirements.

- The "Target system," the system that needs BIOS updates, must have a serial port and "Serial Flash" support embedded in the BIOS image file.
- The "Host system" should also have a serial port and a terminal program that supports XModem Transfer protocol (Hyper Terminal for the Windows operating systems, and minicom for Linux/FreeSBD, etc.).
- A Null_modem serial cable

How to use Serial Flash for Boot Sector Recovery

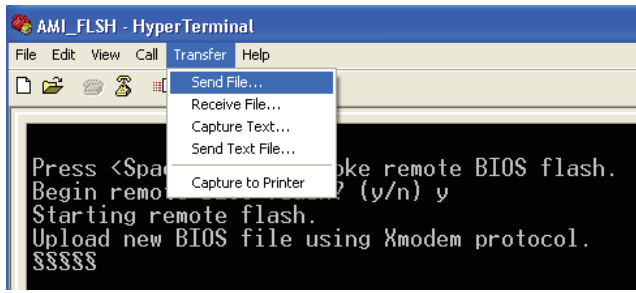
1. Connect a Null_modem serial cable between the target system and the host system that runs the terminal program.

2. Make sure that the new BIOS Image file is accessible for the host system.

3. Start the terminal program on the host system and create a new connection. Use the following communication parameters for the new connection.

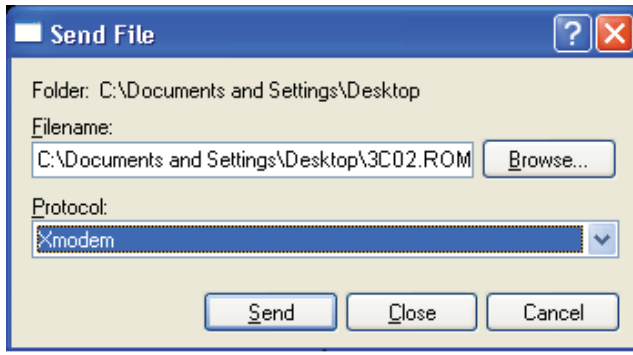
    - Bits per second: 115200 bits/sec.
    - Data Bits: 8
    - Parity: None
    - Stop Bit: 1
    - Flow Control: None

4. Power on your system and click the <Connect> button in the Hyper Terminal.

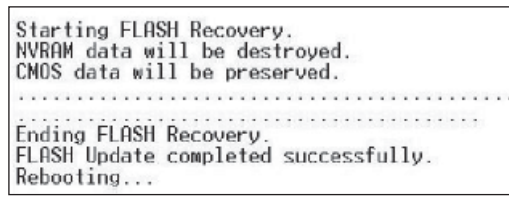


The terminal screen will display the following messages.

5. Following the instructions given on the screen to update the BIOS. These instructions are also shown below.



a. At the prompt, press the <SpaceBar> to update the BIOS.



b. When asked to confirm BIOS updating, press <y> to confirm BIOS updates.

c. Press <y> again to begin flashing BIOS remotely.

Note: Be sure to complete Steps a~c above quickly because you have a second or less to do so.

6. Once you've completed the instructions given, a screen will display to indicate that remote flashing is starting and the new BIOS file is being uploaded.

7. To use Hyper Terminal to transfer the XModem protocol by using the "Send File" dialog under the "Transfer" menu, follow the instructions below to complete XModem transfers.

   a. Select the "Transfer" menu and enter <Send>.

   b. Specify the location of the ROM file and select the proper protocol (XModem).

   c. Press <Send> to start ROM File extraction. (See the picture below.)

   d. Once the ROM file extraction is completed, the message: "New BIOS received OK" will display.

8. Once remote BIOS flash is completed, the system will reboot.

Note: AMIBIOS Serial Flash will work with any terminal communications program that supports VT-100 and XModem protocols, including protocols designed for GNU/LINUX & BSD operating systems such as minicom. It is recommended that the terminal program be configured to use the 'CR/LF' style of line termination.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

A-1 BIOS Error Beep Codes

BIOS Error Beep Codes		
Beep Code	**Error Message**	**Description**
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
8 beeps	Display memory read/ write error	Video adapter missing or with faulty memory
1 continuous beep (with the front panel OH LED on)	System Overheat	1 continuous beep with the front panel OH LED on

Notes

Appendix B

Installing Windows

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1 Installing Windows for a RAID System

1. Insert Microsoft's Windows XP/2003 Setup CD in the CD drive and the system will start booting up from CD.

2. Press the <F6> key when the message "Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ICH10R" into the floppy drive and press the <Enter> key.

5. Choose the Intel(R) ICH10R *SATA RAID Controller* from the list indicated in the XP/2003 Setup Screen, and press the <Enter> key.

6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

7. From the Windows XP/2003 Setup screen, press the <Enter> key. The XP/2003 Setup will automatically load all device files and then, continue the Windows XP/2003 installation.

8. After the Windows XP/2003 OS Installation is completed, the system will automatically reboot.

B-2 Installing Windows for a Non-RAID System

1. Insert Microsoft's Windows XP/2003 Setup CD in the CD drive and the system will start booting up from CD.

2. Continue with the OS installation. The Windows OS Setup screen will display.

3. From the Windows XP/2003 Setup screen, press the <Enter> key. The XP/2003 Setup will automatically load all device files and then continue with the Windows XP/2003 installation.

4. After the Windows XP/2003 OS Installation is completed, the system will automatically reboot.

5. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

Appendix C

System Specifications

Note: unless noted specifications apply to a complete system (four serverboards).

Processors

Four Intel® 5600/5500 Series processors in LGA1366 sockets

Note: Please refer to our website for details on supported processors.

Chipset

Intel 5520/ICH10R

BIOS

32 Mb AMI SPI Flash ROM (each serverboard)

Memory Capacity (each Serverboard)

Twelve DIMM sockets that can support up to 192 GB of registered ECC or 48 GB of unbuffered ECC/Non-ECC DDR3-1333/1066/800 SDRAM

Note: Refer to Section 5-6 for details.

SAS Controller

LSI 2108 controller for 6 Gb/s SAS drives (RAID 0, 1, 5 10 and 6 supported)

Serial ATA Controller

Intel ICH10R on-chip controller to support six 3 Gb/s Serial ATA (RAID 0, 1)

SAS/SATA Drive Bays

Twelve hot-swap drive bays to house standard SATA drives (six per node)

PCI Expansion

Four low-profile PCI Express x16 slots (with pre-installed riser cards)

Serverboard

2026TT-HTRF: X8DTT-HF+

2026TT-HIBXRF: X8DTT-HIBXF+

2026TT-HIBQRF: X8DTT-HIBQF+

2026TT-H6RF: X8DTT-HEF+

2026TT-H6BXRF: X8DTT-HIBXF+

2026TT-H6IBQRF: X8DTT-HIBQF+

Dimensions (all): 16.64" (L) x 6.80" (W) (422.66 mm x 172.72 mm)

Chassis

SC217HQ-R1400BP (2U Rackmount)

Dimensions: (WxHxD) 17.2 x 3.5 x 28.5 in. (437 x 89 x 724 mm)

Weight

Gross Weight: 85 lbs. (38.6 kg.)

System Cooling

Four 8-cm PWM (Pulse Width Modulated) fans

System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 11.5 - 5.5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 1400W (Part# PWS-1K41P-1R) 80 Plus Gold Certified

Rated Output Voltages: +12V (91A @ 110V, 116A @ 180~240V), +5Vsb (4A @ 240V, 4A @ 100V)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

Operating Relative Humidity: 20% to 95% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

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